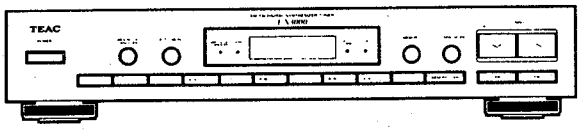
TEAC®



SERVICE MANUAL

T-X3000

AM/FM Digital Synthesizer Tuner

As regards the resistors and capacitors, refer to the circuit diagrams and the PCB ass'y drawing contained in this manual.

- Parts marked with* require longer delivery time.
- ⚠ parts marked with this sign are safety critical components.
  They must always be replaced with identical component-refer to the TEAC parts List and ensure exact replacement.
- PC boards shown viewed from parts side.

Effective: July, 1991

5704054000

1. SPECIFICATIONS

[FM Section] (IHF)
Tuning Cover Range:
87.5 MHz – 108.0 MHz
(100 kHz steps, USA/Canada)
87.50 MHz – 108.00 MHz
(50 kHz steps, Europe/UK/Australia/General Export)
Usable Sensitivity (IHF):
Mono: 13.2 dBf (Europe/UK), 10.8 dBf (Others)
50 dB Quieting Sensitivity:
Mono: 19.9 dBf (Europe/UK), 17 dBf (Others)
Stereo: 42 dBf (Europe/UK), 39.2 dBf (Others)
Alternate Channel Selectivity:
(98 MHz ±400 kHz)
78 dB (Europe/UK), 68 dB (Others)
Image Response Ratio:
80 dB (Europe/UK), 43 dB (Others)
RF Intermodulation:
70 dB (Europe/UK), 65 dB (Others)
Frequency Response: 20 – 15,000 Hz (+1 dB/-2 dB)
Capture Ratio: 1.7 dB (at 98 MHz)
Distortion (at 65 dBf, 98 MHz):
Mono: 0.2 %, Stereo: 0.4 %
Signal-to-Noise Ratio (at 65 dBf, 1 kHz):
Mono: 80 dB, Stereo: 72 dB
AM Suppression Ratio: 65 dB
Stereo Separation (1 kHz): 40 dB
Output (Level/Impedance): 600 mV/2.2 kohms

[AM Section]
Tuning Cover Range: 530 – 1710 kHz
(10 kHz steps, USA/Canada)
522 – 1611 kHz
(9 kHz steps, Europe/UK/Australia/General Export)
Usable Sensitivity: 50 dB/m (316 μV/m, Loop Antenna)
Selectivity: 25 dB (±9 kHz at 999 kHz)
Image Response Ratio: 42 dB (at 999 kHz)
IF Response Ratio: 60 dB (at 999 kHz)
Distortion: 0.5 % (85 dB/m at 999 kHz)
Signal-to-Noise-Ratio: 50 dB (at 85 dB/m)
Output (Level/Impedance): 200 mV/2.2 kohms

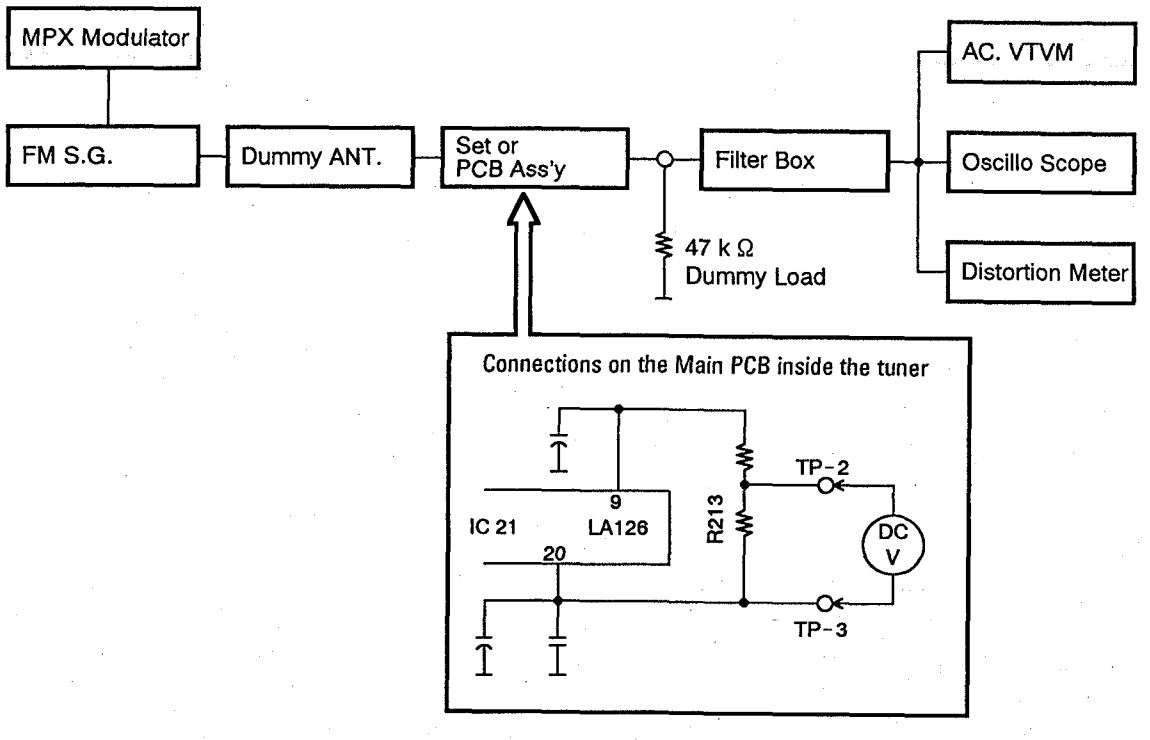
[General]
Power Requirement: 120 V AC, 60 Hz (USA/Canada)
220 V AC, 50 Hz (Europe)
240 V AC, 50 Hz (UK/Australia)
115/230 V AC, 50 – 60 Hz (General Export)
Power Consumption: 10 W
Dimensions (WxHxD): 435 x 82 x 276 mm
Weight (net): 2.9 kg
Accessory: 300/75 ohm Matching Transformer (Europe/UK only), T-bar FM Antenna, AM Loop Antenna, RCA pin plug Cord, Owner's Manual

Improvements may result in specification or feature changing without notice.

2. CHECKS AND ADJUSTMENTS

FM

TEST CONNECTIONS



Connect test equipment as shown in diagram. (A DC voltmeter shall be connected between test points TP-2 and TP-3 on the Main PCB--that is, to the ends of R213.)

1. FM Discrminator Adjustment

1. Set the tuner to its FM position.
2. Tune the tuner to a 98 MHz frequency and load this into any preset station memory.
3. Keep the tuner available to receive the frequency of 98 MHz.
4. Switch the FM Signal Generator so that the tuner is fed with this signal : mono carrier of 98 MHz, modulating frequency of 1 kHz, modulation rate of 100% (75 kHz dev.), at a level of 65 dBf.
5. Adjust T21 until the DC voltmeter connected between TP-2 and TP-3 reads 0 V +/-1 mV.
6. Switch the filter box to select a 200-15,000 Hz band pass filter (BPF), and check for 0.6% THD or less as read on the distortion meter.

2. TUNED LED Lighting Level Adjustment

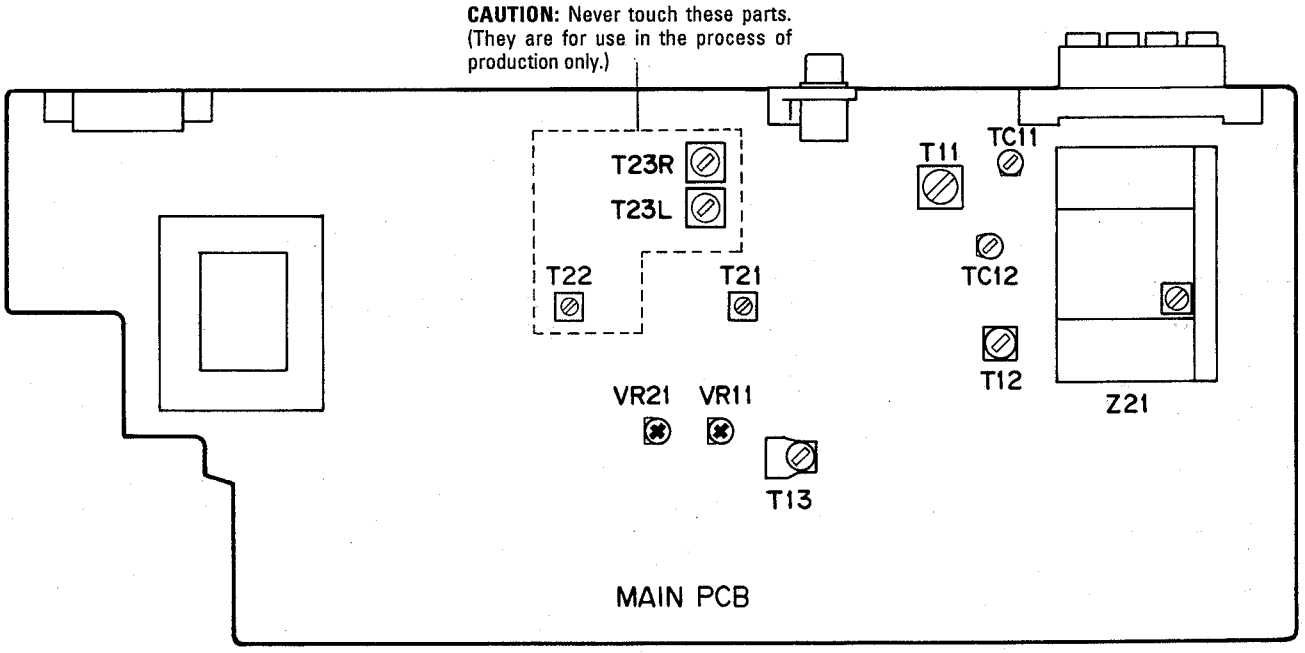
1. The tuner shall be tuned to 98 MHz as before.
2. Switch the FM Signal Generator so that the tuner is fed with this signal : carrier of 98 MHz, modulating frequency of 1 kHz, modulation rate of 100% (75 kHz dev.), at a 25 dBf level.
3. Adjust VR21 until the TUNED indicator lights.

3. IF Coil Adjustment (only when THD is out of specs)

1. Make sure that the tuner is set for 98 MHz.
2. Switch the MXP Modulator so that it sends out a pilot signal at a 9 % modulation rate (6.75 kHz dev.) and a tone of 1 kHz modulating frequency at a 91 % modulation rate (68.25 kHz dev.), and that the tuner is fed through the FM Signal Generator with a 98 MHz carrier at a 65 dBf level.
3. Switch the MXP Modulator so that its tone output is L=-R.
4. Set the tuner to its FM AUTO reception mode and check for the presence of signal at the tuner's outputs. Check also that the STEREO indicator lights up.
5. Switch the filter box to select a 200-15,000 Hz BPF, and check for less than 0.7 % THD as seen on the distortion meter.

Note : If THD is more than 0.7 %, correct it by turning the IF Coil on the Front End PCB within the limits of a 1/3 turn.

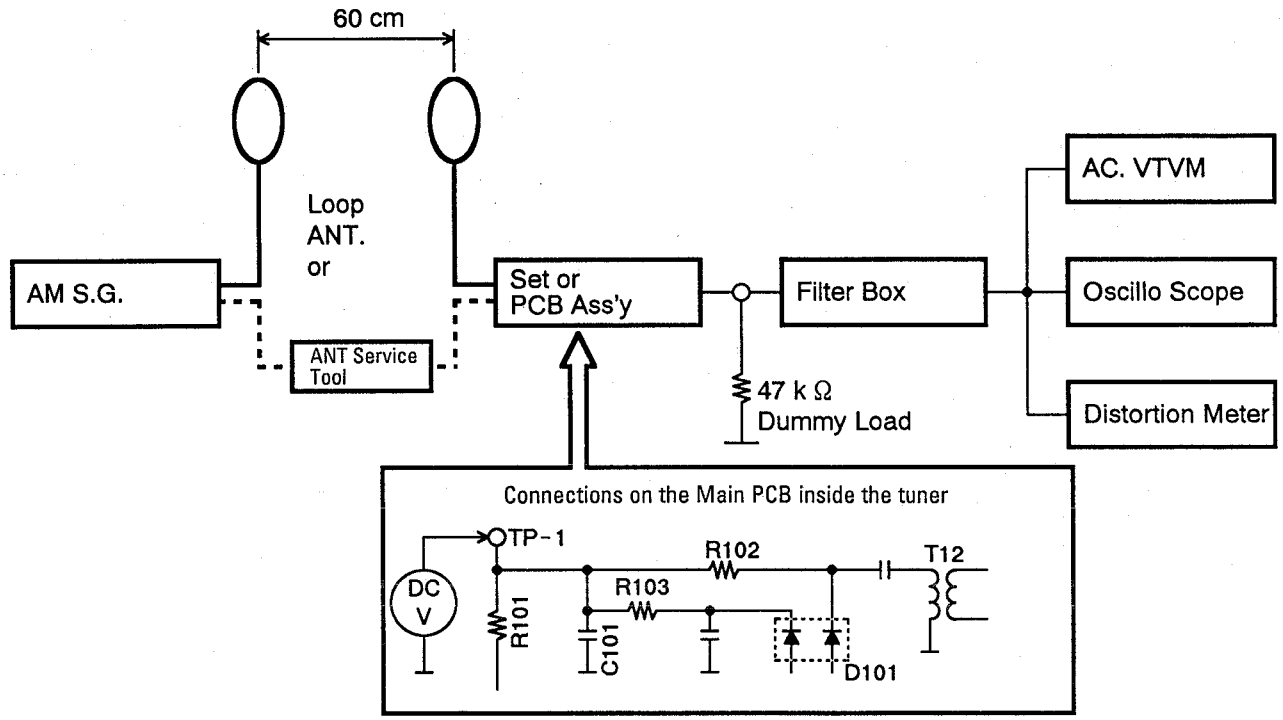
Caution : The IF coil has correctly been adjusted before shipped. Adjustment of the coil affects the characteristic of other devises. Do not touch the coil unless THD is known to be worse than 0.7%.



Adjustment points

AM

TEST CONNECTIONS



Connect test equipment as shown in diagram (DC voltmeter shall be connected between TP-1 and GND on the Main PCB).

1. Tracking Adjustment

1. Set the tuner to its AM position.
2. Load AM Band Edge Frequencies (the lower frequency is 522 or 530 kHz and the upper is 1611 or 1710 kHz) into any preset station memories.
3. Recall from memory the lower frequency of 522 kHz (or 530 kHz), and adjust T12 (oscillator coil) for 1 V +/-0.1 as seen on the DC voltmeter.
4. Recall from memory the upper frequency of 1611 kHz (or 1710 kHz), and adjust TC12 for 8 V+/-0.2 V as seen on the DC voltmeter.
5. As a result of step 4, the adjustment achieved in step 3 has been upset ; so repeat step 3.
6. As a result of step 5, the adjustment achieved in step 4 has been upset ; so repeat step 4.
7. Repeat steps 5 and 6 two or three times until the DC voltmeter reading settles down to 1 V +/-0.1 V for the lower frequency and 8 V +/-0.2 V for the upper frequency.

2. Sensitivity Adjustment

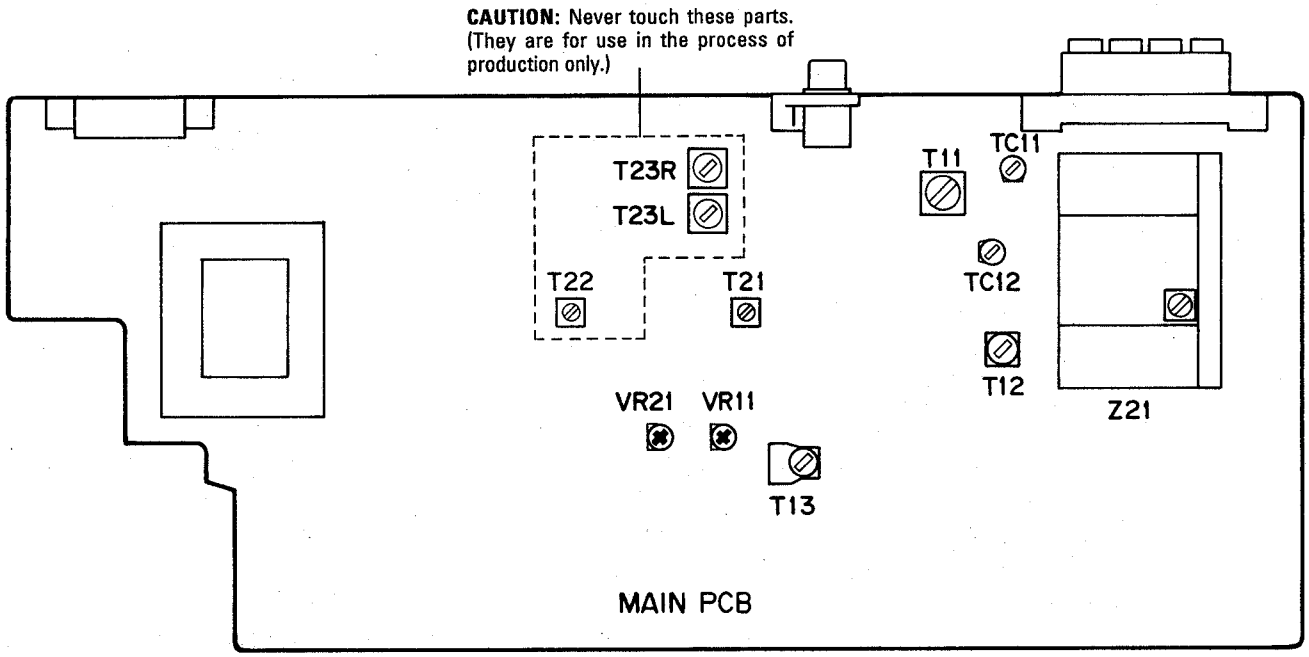
1. Load into any preset station memories these AM frequencies : 603 kHz (or 600 kHz), 999 kHz (or 1000 kHz), and 1404 kHz (or 1400 kHz).
2. Recall the AM 603 kHz (or 600 kHz) frequency from memory, and switch the AM Signal Generator so that the tuner is fed with this signal : carrier frequency of 603 kHz (or 600 kHz), modulating frequency of 400 Hz, amplitude modulation rate of 30 %, at a 55 dB/m antenna input level.
3. Adjust T11 (Antenna Coil) for maximum output voltage (waveform) from the tuner.
4. Recall the AM 1404 kHz (or 1400 kHz) and set the AM Signal Generator so that the tuner is fed with this signal : carrier of 1404 kHz (or 1400 kHz), modulating frequency of 400 Hz, amplitude modulation rate of 30 %, at a 55 dB/m antenna input level.
5. Adjust TC11 for maximum output voltage (waveform) from the tuner.
6. As a result of step 5, the adjustment achieved in step 3 has been upset ; so repeat steps 2 and 3.
7. As a result of step 6, the adjustment achieved in step 5 has been upset ; so repeat steps 4 and 5.
8. Repeat steps 6 and 7 two or three times until both 603 kHz (or 600 kHz) and 1404 kHz (or 1400 kHz) frequencies provide maximum output voltage (waveform) at the tuner's outputs.

3. I.F. Adjustment

1. Recall the frequency of 999 kHz (or 1000 kHz) from memory, and switch the AM Signal Generator so that the tuner is fed with this signal : carrier of 999 kHz (or 1000 kHz), modulating frequency of 400 Hz, amplitude modulation rate of 30 %, at a 55 dB/m antenna input level.
2. Adjust T13 for maximum output voltage (waveform) from the tuner.

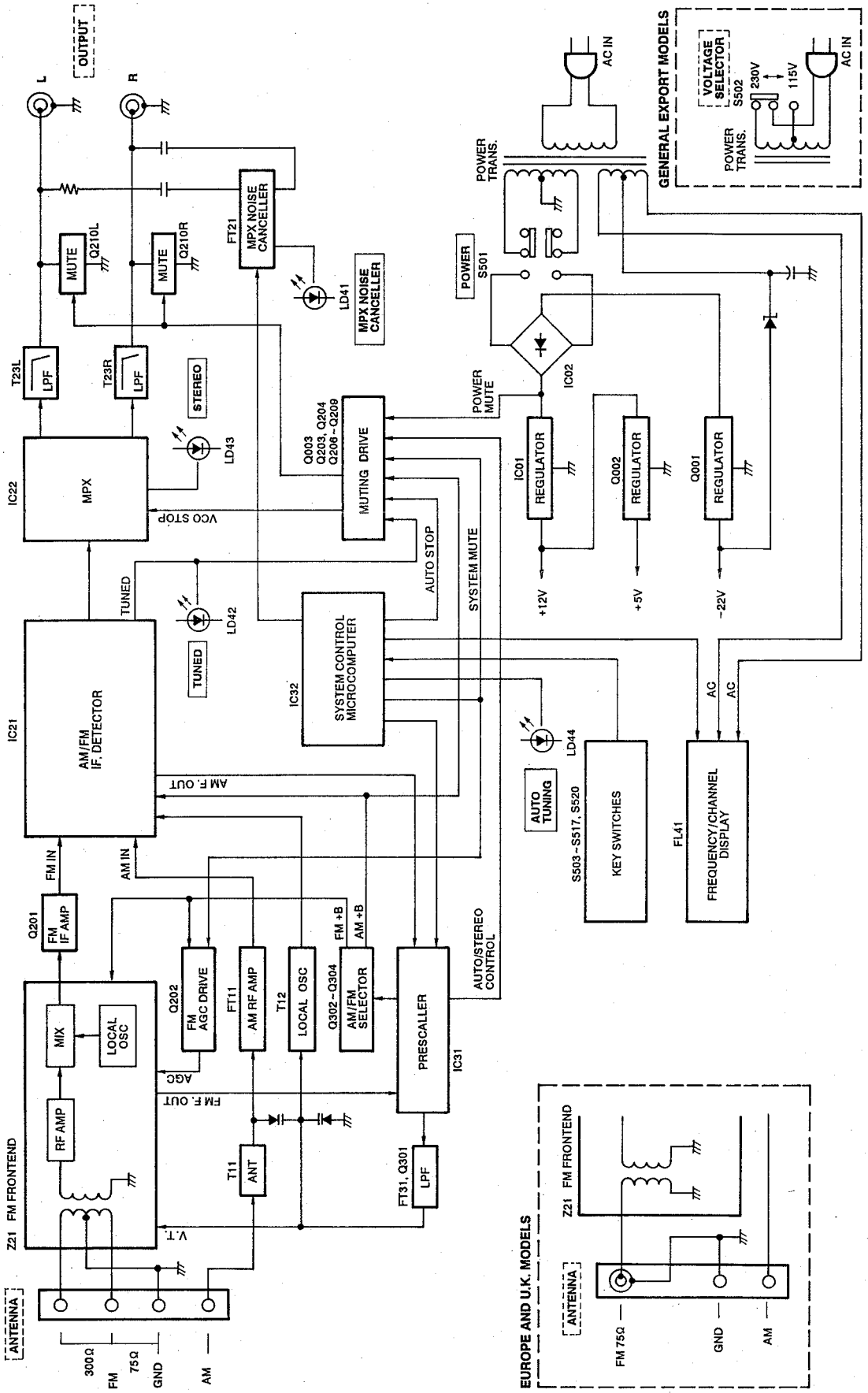
4. TUNED LED Lighting Level Adjustment

1. Recall the frequency of 999 kHz (or 1000 kHz) from memory, and switch the AM Signal Generator so that the tuner is fed with this signal : carrier of 999 kHz (or 1000 kHz), modulating frequency of 400 Hz, amplitude modulation rate of 30 %, at a 65 dB/m antenna input level.
2. Adjust VR11 until the TUNED indicator lights.



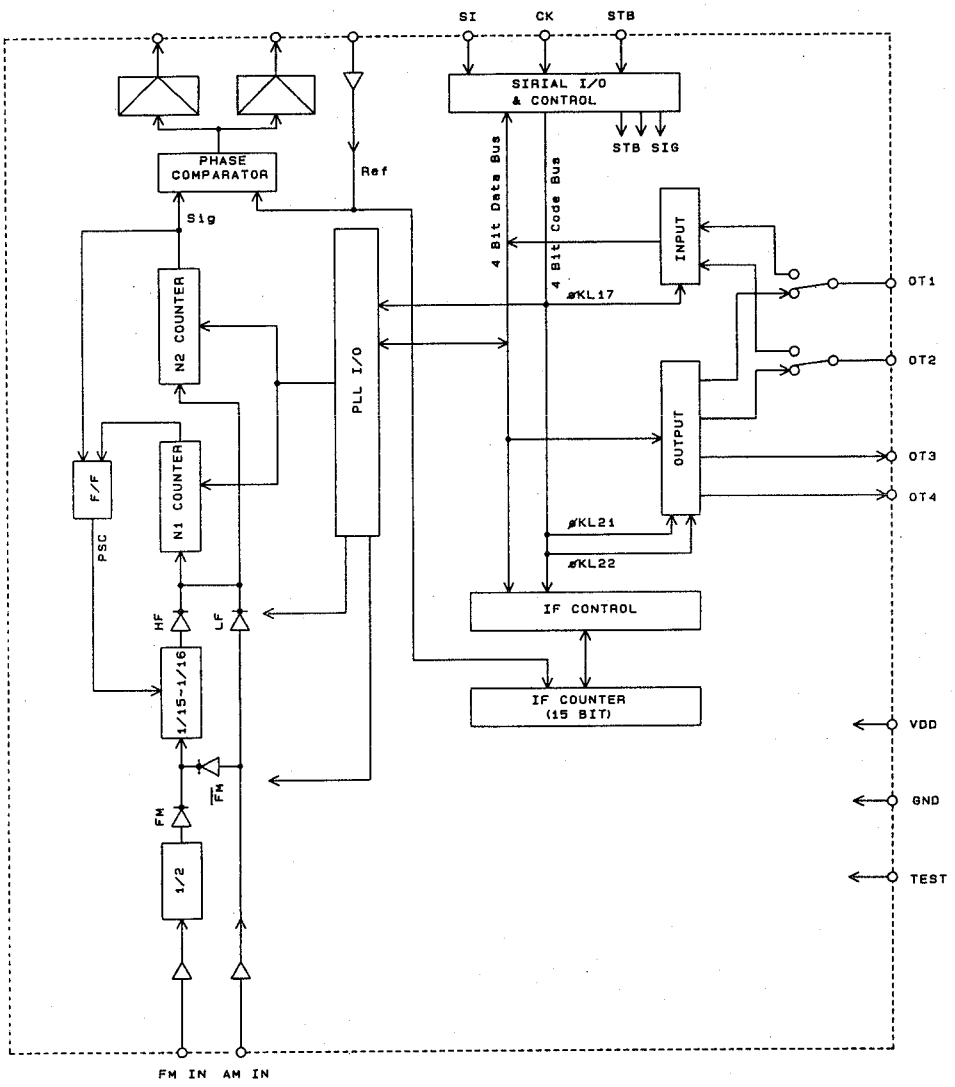
Adjustment points

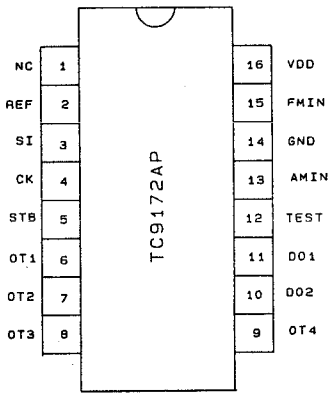
3. BLOCK DIAGRAM



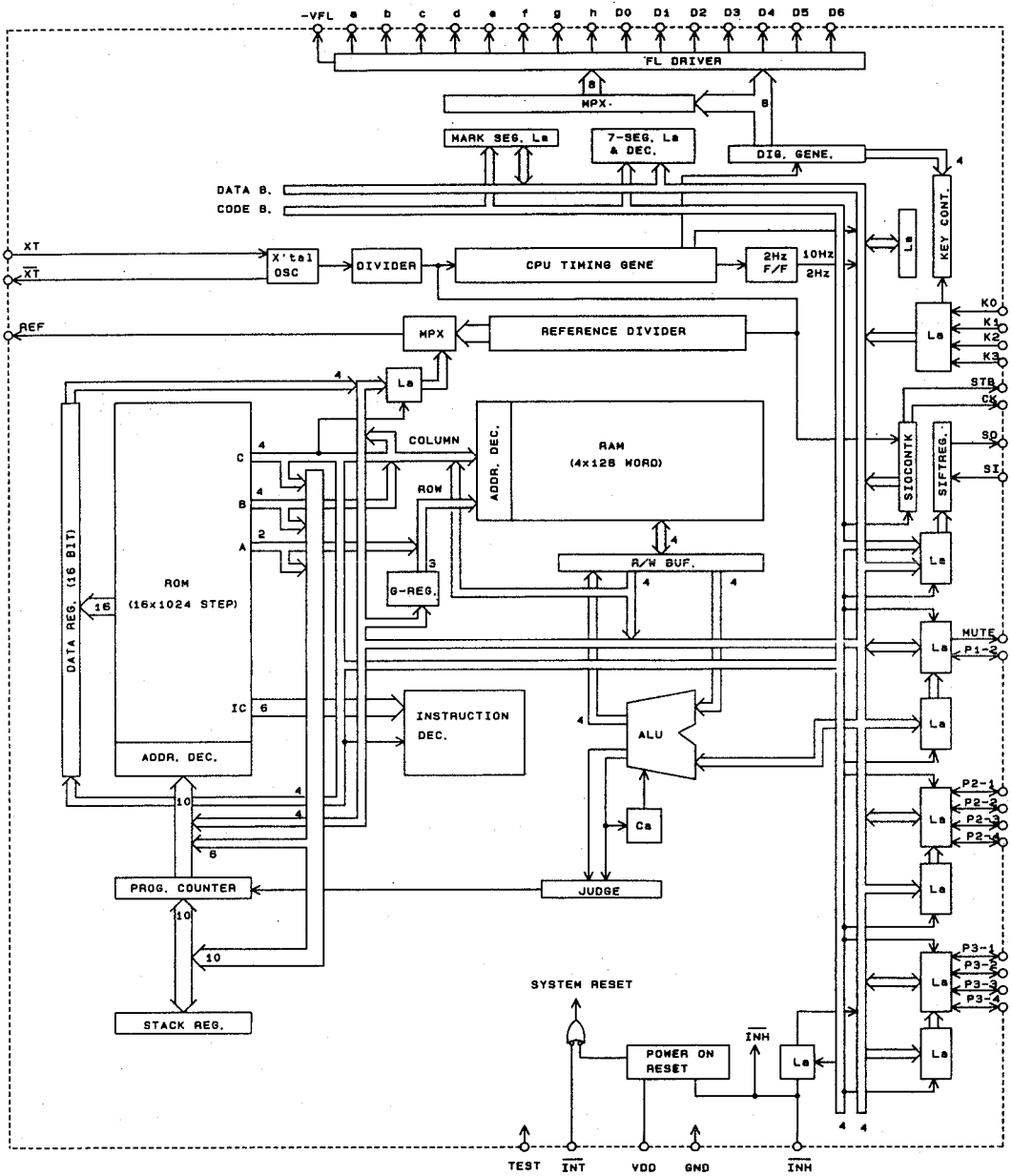
4. IC BLOCK DIAGRAMS

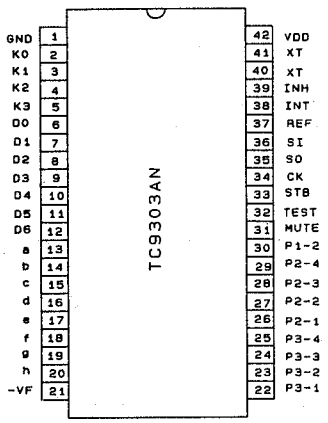
TC9172AP



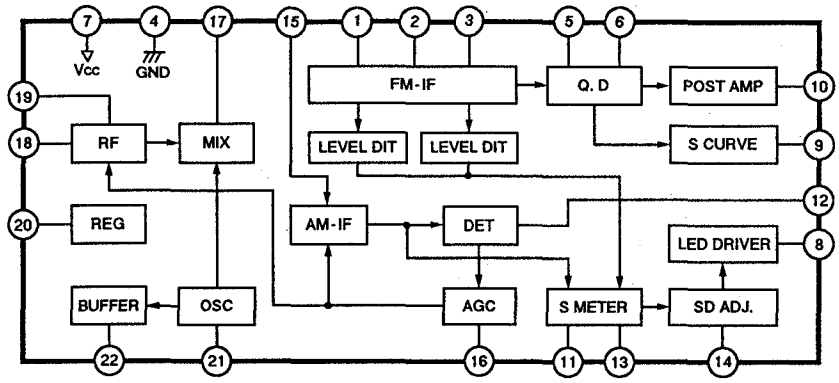


TC9303AN

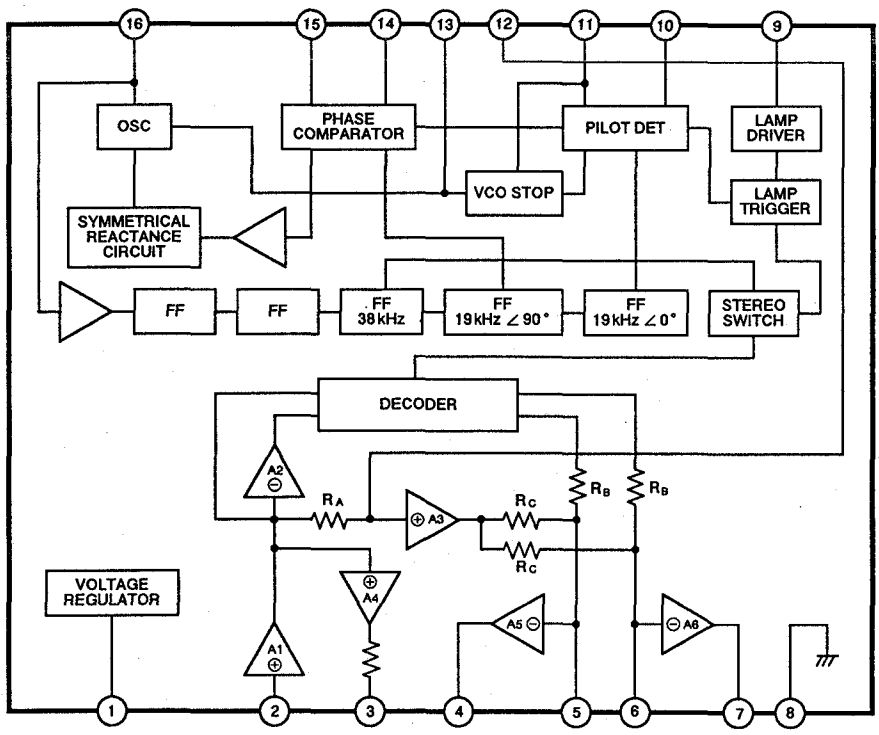

-VFL
a
b
c
d
e
f
g
h
D0
D1
D2
D3
D4
D5
D6
FL DRIVER
MPX.
MARK SEG. La
7-SEG. La & DEC.
DIG. GENE.
KEY CONT.
DATA B.
CODE B.
XT
XT
X'tal OSC
DIVIDER
CPU TIMING GENE
2Hz F/F
10Hz
2Hz
REF
MPX
REFERENCE DIVIDER
La
K0
K1
K2
K3
STB
CS
SO
SI
SIOCONTK
SIFTREG.
COLUMN
ROW
ADDR. DEC.
RAM (4x128 WORD)
R/W BUF.
G-REG.
ROM (16x1024 STEP)
DATA REG. (16 BIT)
INSTRUCTION DEC.
ALU
Ca
ADDR. DEC.
PROG. COUNTER
JUDGE
STACK REG.
MUTE
P1-2
P2-1
P2-2
P2-3
P2-4
P3-1
P3-2
P3-3
P3-4
SYSTEM RESET
POWER ON RESET
INH
TEST
INT
VDD
GND
INH


TC9303AN
GND 1
K0 2
K1 3
K2 4
K3 5
D0 6
D1 7
D2 8
D3 9
D4 10
D5 11
D6 12
a 13
b 14
c 15
d 16
e 17
f 18
g 19
h 20
-VF 21
42 VDD
41 XT
40 XT
39 INH
38 INT
37 REF
36 SI
35 SO
34 CK
33 STB
32 TEST
31 MUTE
30 P1-2
29 P2-4
28 P2-3
27 P2-2
26 P2-1
25 P3-4
24 P3-3
23 P3-2
22 P3-1

LA1265

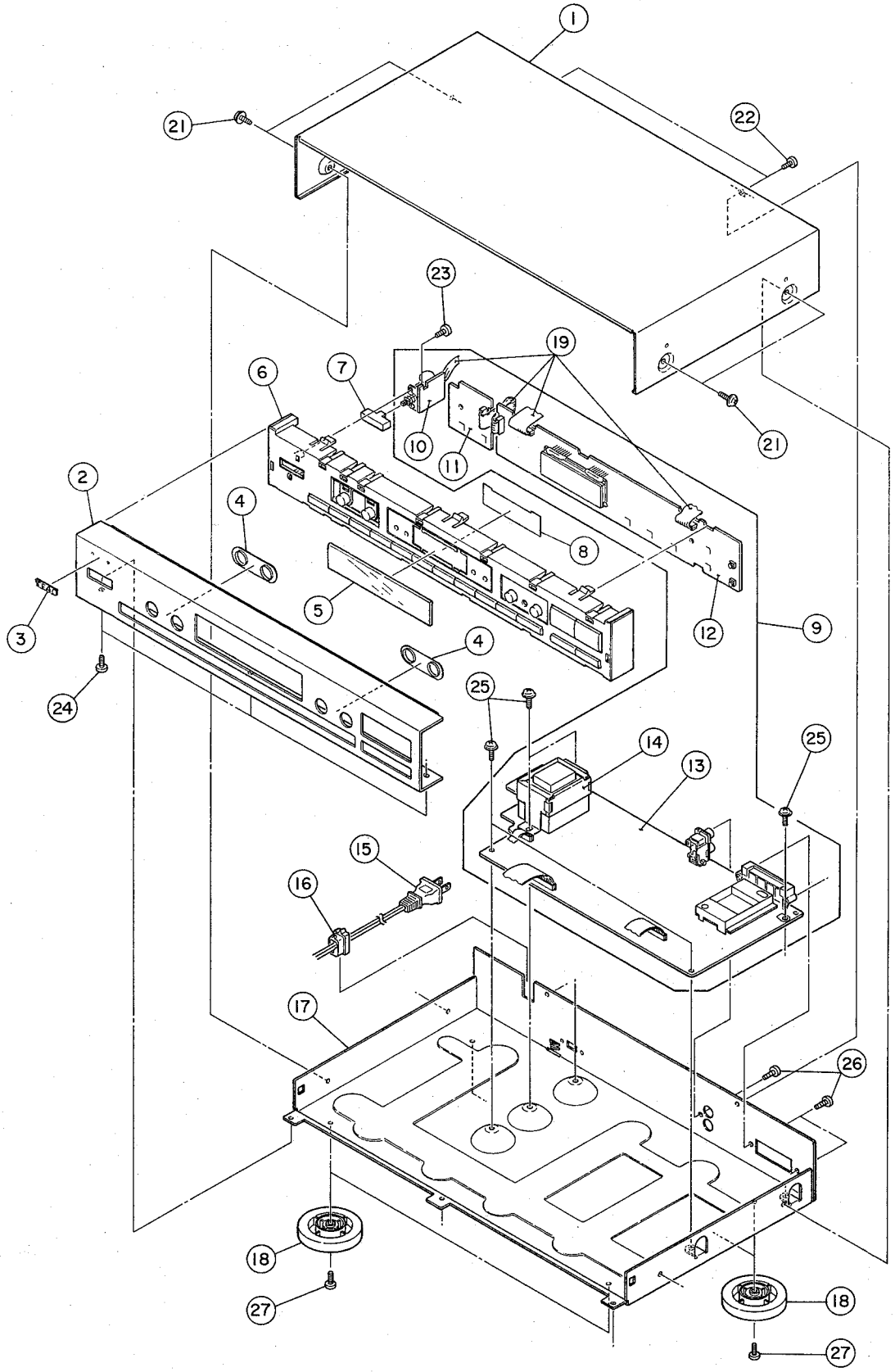


LA3410



5. EXPLODED VIEW AND PARTS LISTS

EXPLODED VIEW



EXPLODED VIEW-1

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
1- 1	*9260131901	BONNET	
1- 2	*9260131600	FRONT PANEL	
1- 3	*5801413200	EMBLEM, TEAC	
1- 4	*9260132500	ESCUTCHEON D	
1- 5	*9260132701	FRONT WINDOW	
1- 6	*9260133201	FRONT BASE SUB ASY	
1- 7	*9260132900	POWER BUTTON	
1- 8	*9260132800	LENS	
1- 9	*9145083002	GATHER PCB ASSY [US,C]	
	*9145083012	GATHER PCB ASSY [E,E-F]	
	*9145083022	GATHER PCB ASSY [GE]	
	*9145083032	GATHER PCB ASSY [A]	
	*9145083042	GATHER PCB ASSY [UK]	
1-10	*9145083400	POWER SW PCB ASSY	Ref. pages 14 & 15
1-11	*9145083300	CONTROL PCB-B ASSY	Ref. pages 14 & 15
1-12	*9145083200	CONTROL PCB-A ASSY [US,C]	Ref. pages 12 & 14
	*9145083210	CONTROL PCB-A ASSY [E,GE,UK,E-F]	Ref. pages 12 & 14
	*9145083220	CONTROL PCB-A ASSY [A]	Ref. pages 12 & 14
1-13	*9145083100	MAIN PCB ASSY [US,C]	Ref. pages 12 & 13
	*9145083110	MAIN PCB ASSY [E,E-F]	Ref. pages 12 & 13
	*9145083120	MAIN PCB ASSY [GE]	Ref. pages 12 & 13
	*9145083130	MAIN PCB ASSY [A]	Ref. pages 12 & 13
	*9145083140	MAIN PCB ASSY [UK]	Ref. pages 12 & 13
1-14	⚠*9125081000	POWER TRANS. [US,C]	
	⚠*9125081200	POWER TRANS. [E,E-F]	
	⚠*9125081300	POWER TRANS. [GE]	
	⚠*9125081400	POWER TRANS. [UK,A]	
1-15	⚠*9109026600	AC CORD [US,C]	
	⚠*9109025701	AC CORD [E,E-F]	
	⚠*9109025800	AC CORD [GE]	
	⚠*9109025901	AC CARD [UK]	
	⚠*9109026000	AC CORD [A]	
1-16	*9121000101	BUSHING, #2271	
1-17	*9260131801	MAIN CHASSIS [US,C,A]	
	*9260133001	MAIN CHASSIS [UK]	
	*9260133101	MAIN CHASSIS [GE]	
	*9260158300	MAIN CHASSIS [E,E-F]	
1-18	*9260113901	FOOT ASSY	
1-19	*9108205700	AMP WIRE ASSY [US,C,GE,A,UK]	
	*9108205710	AMP WIRE ASSY [E,E-F]	
1-21	*9783053006	SCREW, CAP-S M3X6 (BLK)	
1-22	*9783593008	SCREW, C-TITE M3X8(NI-BLK)	
1-23	*9783603008	SCREW, BTT-P M3X8	
1-24	*9783203006	SCREW, BTT-S M3X6	
1-25	*9783103008	SCREW, CAP-S M3X8l	
1-26	*9783613008	SCREW, BTT-P M3X8 (BLK)	
1-27	*9783203008	SCREW, BTT-S M3X8	

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [UK]:U.K. [A]:AUSTRALIA
[E]:EUROPE [E-F]:FRANCE,BELGIUM

Parts marked with *require longer delivery time.

6. PC BOARDS AND PARTS LISTS

MAIN PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9145083100	MAIN PCB ASSY [US,C]
	*9145083110	MAIN PCB ASSY [E,E-F]
	*9145083120	MAIN PCB ASSY [GE]
	*9145083130	MAIN PCB ASSY [A]
	*9145083140	MAIN PCB ASSY [UK]
	*9155083001	GATHER PCB
	*9155083101	MAIN PCB
	*9783013008	SCREW, PTT-B M3X8
	⚠*9125081000	POWER TRANS. [US,C]
	⚠*9125081200	POWER TRANS. [E,E-F]
	⚠*9125081300	POWER TRANS. [GE]
	⚠*9125081400	POWER TRANS. [A,UK]
	*9229021000	EARTH PLATE (A) P.C.B.
C005	⚠ 9117260000	C., ELEC 1000UF/35V
C311	⚠ 9117302500	C., ELEC 3300UF/6.3V
CF11	9173005000	OSC,CERAMIC BUF450C
CF21	9174005500	FILTER CERAMIC 10.7MS2H-A [US,C,GE,A]
	9174005600	FILTER CERAMIC 10.7MS3H-A [E,UK,E-F]
CF22	9174005500	FILTER CERAMIC 10.7MS2H-A [US,C,GE,A]
	9174005600	FILTER CERAMIC 10.7MS3H-A [E,UK,E-F]
CF23	9174005700	FILTER CERAMIC CSB456F11
D 11	9174005400	V.C.D KV1236Z
D 12 13	9165020250	DIODE,1S1555
D005-008	9165020250	DIODE,1S1555
D009	9166033601	ZENER DIODE, 05AZ24Y
D010	9166032901	ZENER DIODE, 05AZ15Y
D011	9166031900	ZENER DIODE, 05AZ4.7Y
D012	9166032201	ZENER DIODE, 05AZ6.2Y
D201-210	9165020250	DIODE,1S1555
FT11	9164004420	FET, 2SK192A-Y
FT21	9164004520	FET, 2SK117Y
FT31	9164004520	FET, 2SK117Y
IC01	⚠ 9167010300	IC.,UPC7812H
IC02	⚠ 9165021700	BRIDGE RECTIFIER,PBDF103
IC21	9167017500	IC, LA1265
IC22	9167017600	IC, LA3410
IC31	9167017700	IC, TC9172AP
JP 1	9143262100	WIRE HOLDER, 4P SC-004
JP 2	9143268100	WIRE HOLDER, 10P SC-0010
JP 4	9143265100	WIRE HOLDER, 7P SC-007
Q001	9163009920	TRANSISTOR 2SA1015GR
Q002	9163309420	TRANSISTOR 2SC1815GR
Q003	9163012620	DIGI.TRANSISTOR RN2211
Q201	9163311920	TR, 2SC2668Y
Q202 203	9163312020	DIGI.TRANSISTOR RN1207
Q204	9163012520	DIGI.TRANSISTOR RN2207
Q206,208	9163312020	DIGI.TRANSISTOR RN1207
Q207,209	9163012520	DIGI.TRANSISTOR RN2207
Q210L R	9163309420	TRANSISTOR 2SC1815GR
Q301	9163309420	TRANSISTOR 2SC1815GR
Q302	9163312020	DIGI.TRANSISTOR RN1207

MAIN PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
Q303 304	9163012520	DIGI.TRANSISTOR RN2207
R001	⚠9111817010	R., NONFAMMABLE 3W 15
R003	⚠9111818010	R., NONFAMMABLE 1W 15
R207,216	⚠9111819010	R., NONFAMMABLE R-50 22
R237,301	⚠9111819010	R., NONFAMMABLE R-50 22
S502	⚠5300918700	SELECTOR SW SDKGA4 [GE]
T 11	9174004700	AN ANT COIL(RHNF-45534AG)
T 12	9174004800	AM OSC COIL A7BRS-11566AN
T 13	9174004900	IF+CF COIL (CFAZ-009)
T 21	9174005100	DET COIL M292TEAS-2471DLE
T 22	9174005300	ACF COIL (256BLR-5559N) [E,UK,E-F]
T 23L R	9174005200	L.P.F COIL 19KHZ
TC11 12	5267207000	C.,TRIMMER VCT51F 30P
VR11	9112056000	SEMI-FIXED VR 4.7K (B)
VR21	9112059300	SEMI-FIXED 15K (B)
Z 21	5347019400	FM TUNER,TFFG3E171A [E,UK,E-F]
	5347019700	FM TUNER,TFFG1U [US,C,GE,A]
Z001	9260069801	HEAT SINK
Z901	9143307000	TERMINAL [E,UK,E-F]
	9143308000	TERMINAL [US,C,GE,A]
Z902	9143280000	PIN JACK 2P (YKC21-0296)
Z907	5327009600	TERMINAL LAPPING 2P

CONTROL PCB-A ASSY

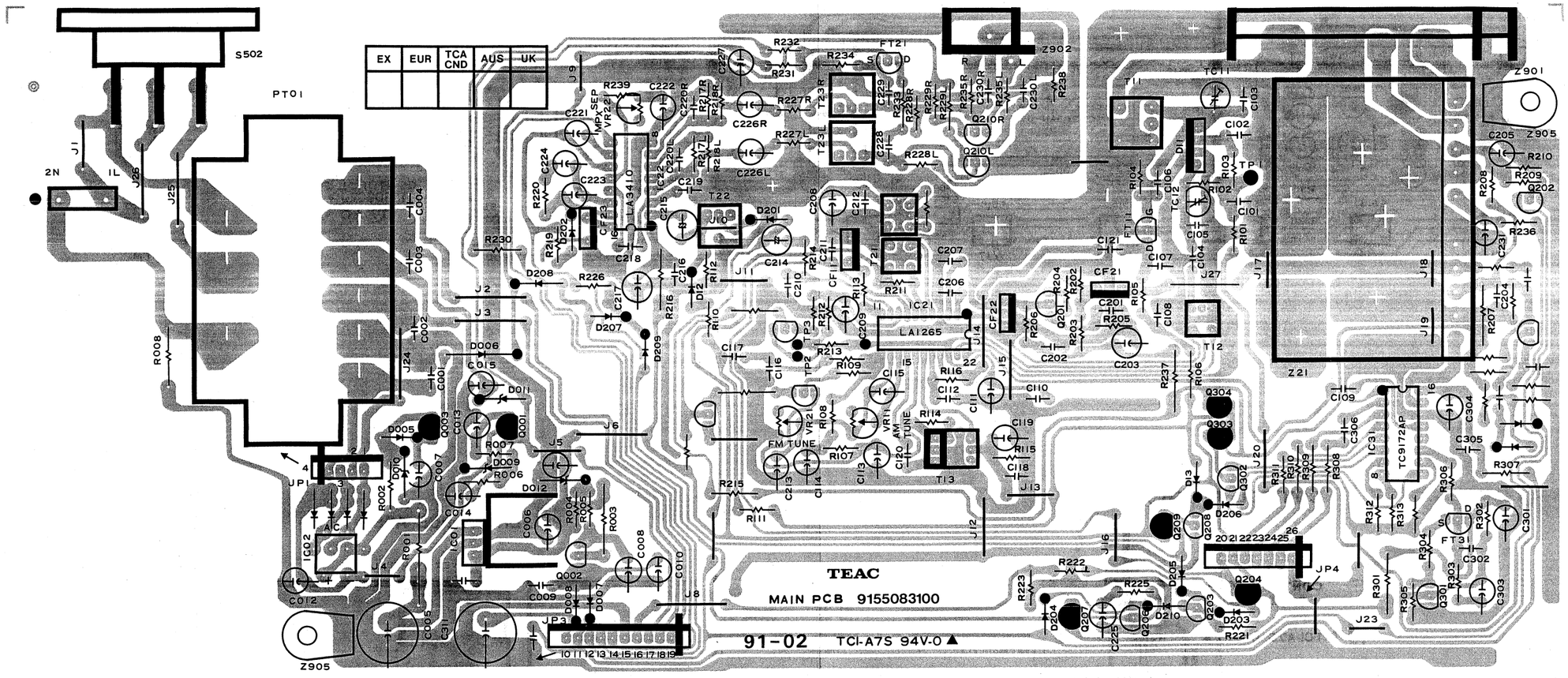
REF.NO.	PARTS NO.	DESCRIPTION
	*9145083200	CONTROL PCB-A ASSY [US,C]
	*9145083210	CONTROL PCB-A ASSY [E,GE,UK,E-F]
	*9145083220	CONTROL PCB-A ASSY [A]
	*9155083001	GATHER PCB
	*9155083201	CONTROL PCB-A
	9260135800	DISPLAY CUSHION
D 31,	9165020250	DIODE,1S1555
D503-508	9165020250	DIODE,1S1555
D509	9165020250	DIODE,1S1555 [US,C]
D510-513	9165020250	DIODE,1S1555
D514	9165020250	DIODE,1S1555 [US,C,A]
D515	9165020250	DIODE,1S1555 [E,GE,UK,E-F]
FL41	5347017400	FL DISPLAY
IC32	9167017800	IC, TC9303AN-022
JP 2	9143268100	WIRE HOLDER, 10P SC-0010
JP 3	9143263100	WIRE HOLDER, 5P SC-005
JP 4	9143265100	WIRE HOLDER, 7P SC-007
LD41- 44	9174013620	LED YEL 3 LY2041/TR2 16MM
Q305,307	9163312020	DIGI.TRANSISTOR RN1207
Q306	9163312120	DIGI.TRANSISTOR RN1204
Q308,501	9163012520	DIGI.TRANSISTOR RN2207
Q401 402	9163312020	DIGI.TRANSISTOR RN1207
S503-517	9136001400	TACK SW SKHHAK2510-TK
X 31	9173006000	QUARTZ CRYSTAL 7.2MHZ

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [UK]:U.K. [A]:AUSTRALIA
[E]:EUROPE [E-F]:FRANCE,BELGIUM

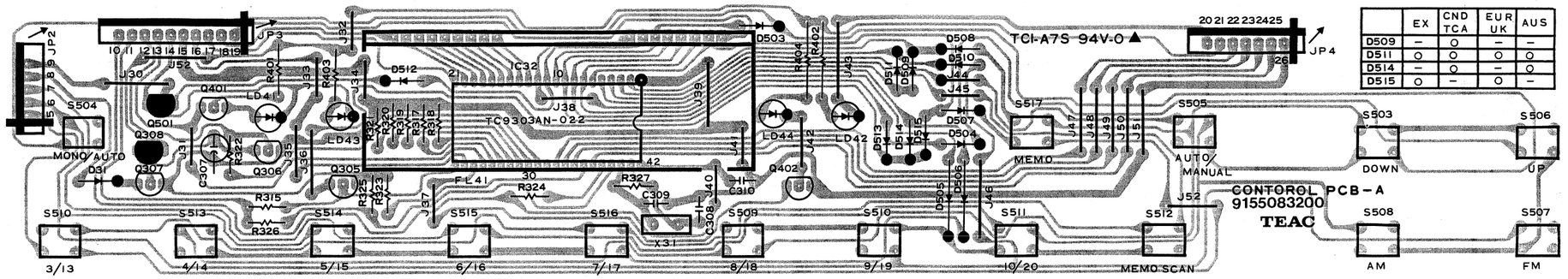
Parts marked with *require longer delivery time.

** Continued on page 15

MAIN PCB ASSY

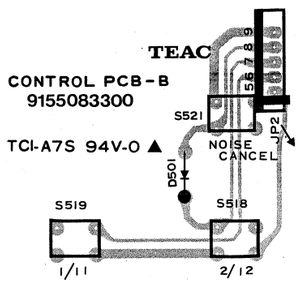


CONTROL (A) PCB ASSY

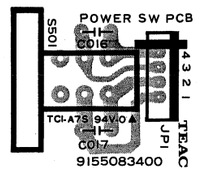


	EX	CND TCA	EUR UK	AUS
D509	–	O	–	–
D511	O	O	O	O
D514	–	O	–	O
D515	O	–	O	–

CONTROL (B) PCB ASSY



POWER SW PCB ASSY



T-X3000

TEAC®

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CONTROL PCB-B ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9145083300	CONTROL PCB-B ASSY
	*9155083001	GATHER PCB
	*9155083300	CONTROL PCB-B
D501	9165020250	DIODE,1S1555
JP 3	9143263100	WIRE HOLDER, 5P SC-005
S518 519	9136001400	TACK SW SKHHAK2510-TK
S521	9136001400	TACK SW SKHHAK2510-TK

POWER SW PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9145083400	POWER SW PCB ASSY
	*9155083001	GATHER PCB
	*9155083401	POWER SW PCB
JP 1	9143262100	WIRE HOLDER, 4P SC-004
S501	⚠ 9135031000	SW.,POWER

GATHER PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9145083002	GATHER PCB ASSY [US,C]
	*9145083012	GATHER PCB ASSY [E,E-F]
	*9145083022	GATHER PCB ASSY [GE]
	*9145083032	GATHER PCB ASSY [A]
	*9145083042	GATHER PCB ASSY [UK]
	*9145083100	MAIN PCB ASSY [US,C]
	*9145083110	MAIN PCB ASSY [E,E-F]
	*9145083120	MAIN PCB ASSY [GE]
	*9145083130	MAIN PCB ASSY [A]
	*9145083140	MAIN PCB ASSY [UK]
	*9145083200	CONTROL PCB-A ASSY [US,C]
	*9145083210	CONTROL PCB-A ASSY [E,GE,UK,E-F]
	*9145083220	CONTROL PCB-A ASSY [A]
	*9145083300	CONTROL PCB-B ASSY
	*9145083400	POWER SW PCB ASSY

INCLUDED ACCESORIES

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
	*9101383500	OWNER'S MANUAL	
	*9109025100	CORD,IN-OUT	
	*5286042400	LOOP ANTENA	
	*9174006200	FM T TYPE ANTENA	
	*9143309000	75-300 ANT PLUG YAD21-235 (EUR/UK only)	

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [UK]:U.K. [A]:AUSTRALIA
[E]:EUROPE [E-F]:FRANCE,BELGIUM

Parts marked with *require longer delivery time.

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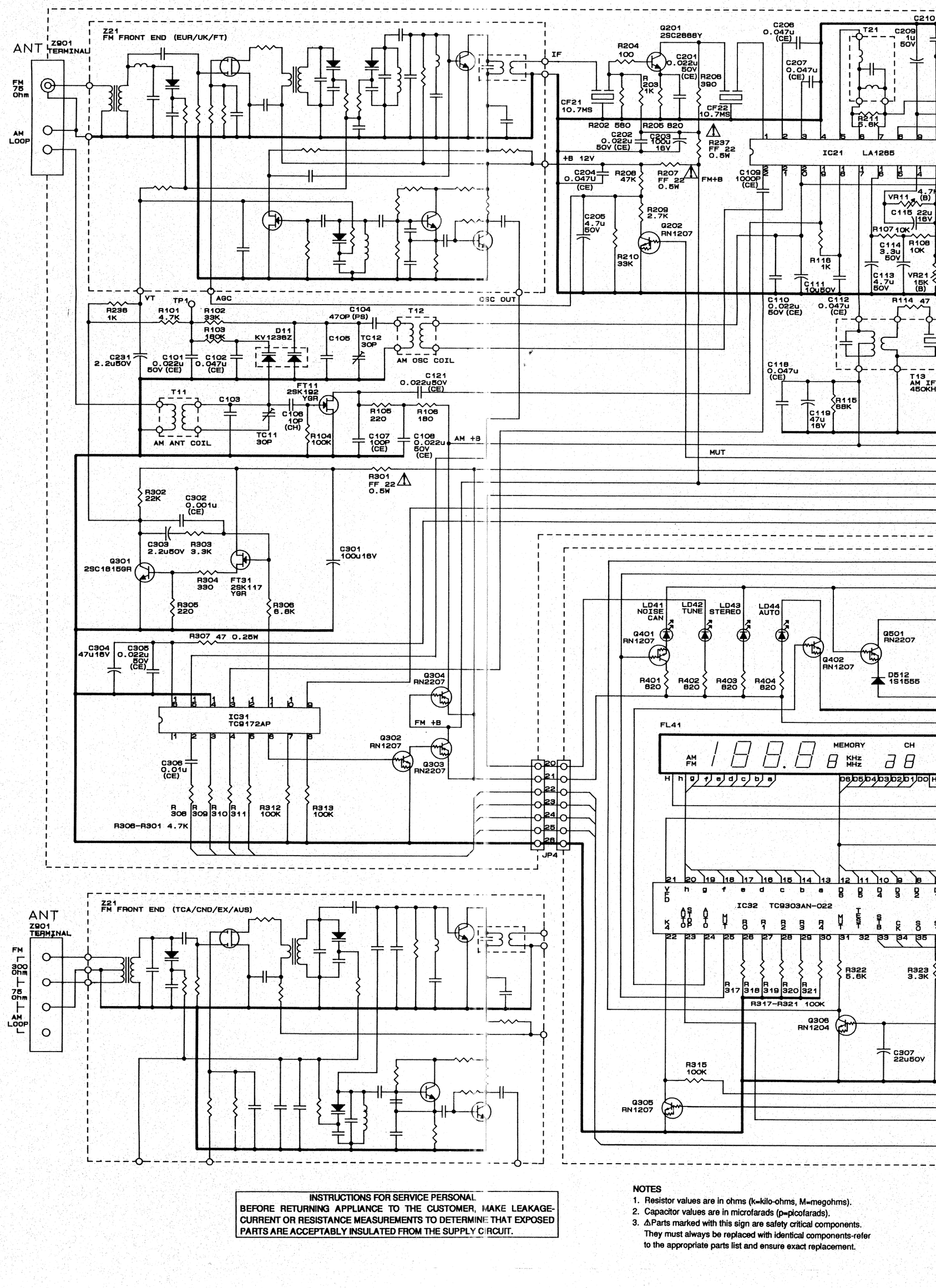
TEAC SCHEMATIC DIAGRAM T-X3000



INSTRUCTIONS FOR SERVICE PERSONAL

BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

NOTES

1. Resistor values are in ohms (k=kilo-ohms, M=megohms).
2. Capacitor values are in microfarads (p=picofarads).
3. ⚠Parts marked with this sign are safety critical components. They must always be replaced with identical components-refer to the appropriate parts list and ensure exact replacement.

megohms).
rads).
l components.
omponents-refer
eplacement.

T-X3000 AM/FM Digital Synthesizer Tuner

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